



Stop Caries NOW for a Cavity-Free Future  
European Chapter

## Stop Caries NOW for a Cavity-Free Future European Chapter

### FACT SHEET: ABOUT DENTAL CARIES

#### What is dental caries?

- **Dental caries** is the technical term used by healthcare and dental professionals to describe the disease more commonly known as **tooth decay**.<sup>1-2</sup>
- Dental caries is the localised destruction of a susceptible tooth surface by the action over a long time period of acidic by-products from the breakdown of sugars in a person's diet.<sup>1-2</sup>
- Research shows<sup>3-5</sup> that **dental caries occurs across a series of stages, or a 'continuum' of disease**. The three main stages – using the ICCMS™ system now advocated across Europe<sup>6-10</sup> – are known as:
  - **Initial-stage:** (ICDAS Codes 1 and 2) – characterised by the first clinically non-cavitated visual changes in enamel seen by a dental professional on clean dry teeth – and any equivalent lesions seen on dental x-ray films. These lesions can be controlled and potentially reversed with changes to diet and personal dental hygiene practices, supplemented by fluorides.
  - **Moderate-stage:** (ICDAS Codes 3 and 4) – characterised clinically by either a localised enamel breakdown (without clinical visual signs of dentinal involvement) or an underlying dark shadow from dentine – and the equivalent lesions seen on dental x-ray films. Some of these lesions can be controlled by more intensive preventive treatments and homecare, whilst others may require tooth-preserving fillings.
  - **Extensive-stage:** (ICDAS Codes 5 and 6) – characterised by a distinct cavity with visible dentine or an extensive distinct cavity with visible dentin involving more than half of the tooth surface – and the equivalent lesions seen on dental x-ray films. These lesions are likely to require tooth-preserving fillings as well as preventive control of the underlying disease causing factors.
- Relentless progression through the stages of the continuum is NOT inevitable. **The initial stages of the disease can be stopped and may be reversible.**<sup>2</sup>

#### How does dental caries occur?

- Dental caries is a complex, preventable and, at the initial stages, reversible disease caused by a number of disease promoting factors operating simultaneously on a vulnerable tooth site.

- The 'caries process' is the name given to the repeated sequence of changes going on at the junction between the outer surface of the tooth and the layer of plaque/ biofilm that builds up on teeth.
  - If in the case of a particular 'caries lesion' on a tooth surface, the balance over time is that more tooth mineral is lost from the tooth than is replaced back into it, then dental caries will start, or, if there is already an initial caries lesion present, the caries lesion will progress to a more advanced stage.
  - **Or**, if in the case of a particular caries lesion on a tooth surface, the balance over time is that more tooth mineral is deposited on and into the outer surface of the tooth than is lost from the tooth by the acid attack, then dental caries will not start, or if there is already a 'caries lesion' present, the lesion should STOP or regress to a less advanced stage.<sup>1,2</sup>



### How can dental caries be prevented and controlled?

- The modern approach to the 'continuum of caries' is now recognised across Europe as a key part of control and preventive management. It is recommended by key European organisations as the style of caries care that should be taught across Europe.<sup>6,7</sup>
- A charitable foundation, the International Caries Detection and Assessment System (ICDAS)<sup>4, 5, 7-9</sup> has built and is developing a universal system to classify and treat dental caries, called the International Caries Classification and Management System (ICCMS™).<sup>10</sup>



Stop Caries NOW for a Cavity-Free Future  
European Chapter

## Stop Caries NOW for a Cavity-Free Future European Chapter

- The ICCMS™ provides a way for dental associations and dental schools to deliver the new approach of 'caries as a continuum' in order to improve dental caries prevention and management.
- If comprehensive caries prevention and management strategies are put in place early in a child's development, it should be possible that every child born from 2026 should stay cavity free during their life time.<sup>11</sup>

### What is the dental caries landscape in Europe?

- By maintaining a good oral health routine, dental caries should not progress to cavities or tooth loss.
- Only 41% of Europeans still have all their natural teeth.<sup>12</sup>
- Without fluoride prevention, the cost of lifelong treatment for dental caries on average is almost €7,000.<sup>13</sup>
- Dental caries remains a major problem, especially in Eastern Europe and in socio-economically deprived groups in Europe.<sup>14</sup>
- Globally, children miss 51 million hours of school each year because of dental caries.<sup>14</sup>
- In the UK, dental caries was the fourth most common reason children were admitted to hospital in 2012.<sup>15</sup>
- Across Europe, by the time children reach 12-years-old, the number of obviously decayed, missing or filled teeth differs across countries.<sup>16</sup>
- In some parts of Europe the level of dental caries is five times higher than in others.<sup>17</sup>



Stop Caries NOW for a Cavity-Free Future  
European Chapter

## Stop Caries NOW for a Cavity-Free Future European Chapter

### References

1. Selwitz RH, Ismail AI, Pitts NB. Dental caries. *Lancet* 2007; 369: 51-59.
2. Longbottom CL, Huysmans MC, Pitts NB, Fontana M. Glossary of key terms. *Monographs in Oral Science* 2009; 21: 209-216.
3. Kidd EA, Ricketts DN, Pitts NB. Occlusal caries diagnosis: A changing challenge for clinicians and epidemiologists. *Journal of Dentistry* 1993; 21: 323-331.
4. Ekstrand KR, Ricketts DN, Kidd EA. Reproducibility and accuracy of three methods for assessment of demineralization depth of the occlusal surface: an in vitro examination. *Caries Research* 1997; 31: 224-231.
5. Ekstrand KR, Ricketts DN, Kidd EA, Qvist V, Schou S. Detection, diagnosing, monitoring and logical treatment of occlusal caries in relation to lesion activity and severity: an in vivo examination with histological validation. *Caries Research* 1998; 32: 247-254.
6. Schulte AG, Pitts NB, Huysmans MC, Splieth C, Buchalla W. European Core Curriculum in Cariology for undergraduate dental students. *European Journal of Dental Education* 2011; 15 (Suppl. 1): 9-17.
7. Pitts NB, Melo P, Martignon S, Ekstrand KR, Ismail A. Caries risk assessment, diagnosis and synthesis in the context of a European Core Curriculum in Cariology. *European Journal of Dental Education* 2011; 15 (Suppl. 1): 23-31.
8. Pitts NB. "ICDAS" – an international system for caries detection and assessment being developed to facilitate caries epidemiology, research and appropriate clinical management. *Community Dental Health* 2004; 21: 193-198.
9. Ismail AI, Sohn W, Tellez M, Amaya A, Sen A, Hasson H, Pitts NB. The International Caries Detection and Assessment System (ICDAS): an integrated system for measuring dental caries. *Community Dentistry and Oral Epidemiology* 2007; 35: 170-178.
10. Pitts NB, Ekstrand KR, The ICDAS Foundation. International Caries Detection and Assessment System (ICDAS) and its International Caries Classification and Management System (ICCMS™) – methods for staging of the caries process and enabling dentists to manage caries. *Community Dentistry and Oral Epidemiology* 2013; 41: e41-e52.
11. Bedi R (Ed). *Reforming Dental Services in England: Policy Options*. *Health Education Journal* Vol 64 (4) December 2005 (Supplement) ISSN 0017 8969 (Including Pitts N as a National Expert Panel Member).



Stop Caries NOW for a Cavity-Free Future  
European Chapter

## Stop Caries NOW for a Cavity-Free Future European Chapter

12. Facts and Figures – The State of Oral health in Europe (2012). Available at [http://www.oralhealthplatform.eu/sites/default/files/field/document/Factsheet\\_oral%20health%20in%20Europe\\_2012\\_0.pdf](http://www.oralhealthplatform.eu/sites/default/files/field/document/Factsheet_oral%20health%20in%20Europe_2012_0.pdf) [Last accessed June 2013].
13. Splieth CH, Flessa S. Modelling lifelong costs of caries with and without fluoride use. European Journal of Oral Sciences 2008; 116: 164-169.
14. Bagramian RA, Garcia-Godoy F, Volpe AR. The global increase in dental caries. A pending public health crisis. American Journal of Dentistry 2009; 22: 3-8.
15. Hospital Episode Statistics (HES), The NHS Information Centre for health and social care. Available <http://www.publications.parliament.uk/pa/cm201212/cmhansrd/cm120416/text/120416w0005.htm>. [Last accessed June 2013].
16. European Food Information Council - Dental Health. Available at <http://www.eufic.org/article/en/expid/basics-dental-health/>. [Last accessed June 2013].
17. Fluoride and Dental Health in Europe. Available at <http://www.bfsweb.org/documents/denthlth.PDF>. [Last accessed June 2013].